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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,327	02/28/2002	Yasushige Nakamura	000738a	8134

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12
EXAMINER

RODEE, CHRISTOPHER D

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 07/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/084,327

Applicant(s)

NAKAMURA ET AL.

Examiner

Christopher D RoDee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9,13-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9,13-16 and 18-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The indicated allowability of claims 9, 13-16 and 18-22 is withdrawn in view of the newly discovered reference(s) to Horikoshi *et al.* in US Patent 5,618,648 and Nagase *et al.* in US Patent 6,194,115. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 9, 13-15, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horikoshi *et al.* in US Patent 5,618,648 in view of Nagase *et al.* in US Patent 6,194,115 further in view of JP 5-107805 and the admitted art.

Horikoshi discloses a flash fixing toner having a specific polyester binder resin formed from ethyleneoxide and propyleneoxide adducts of Bisphenol A (e.g., Example 2), a colorant, an optional wax (col. 9, l. 33), and a charge control agent (col. 3, l. 59 - col. 4, l. 37; col. 9, l. 29-36) and of a size of 5 to 20 μm . The toner is used in a flash fixing process where an electrostatic image is formed on a photosensitive drum, the toner develops the image, the developed image is transferred to a support, and the toner image is fixed by the heat from a flash light (col. 9, l. 59-9). The toner is mixed with a carrier to form a developer.

Horikoshi states that oligomers have been conventionally used in flash fixing toners. These compounds have molecular weights of less than 1500 (col. 2, l. 45-67) and give a low glass transition temperature (T_g). However, these compounds produce various problems, such as low storage stability, toner blocking occurs, coarse toner (agglomerates) are formed, and the

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toner properties are altered by the environment. Horikoshi seeks to overcome these problems by increasing the Tg while maintaining a low boiling point (col. 3, l. 1-6). Horikoshi also notes that an unpleasant odor is often produced in flash fixing of toners because of residual monomers (e.g., acid monomers) in the toner product (col. 3, l. 21-30; col. 16, l. 5-24).

Horikoshi notes that it is effective to use binder components that have little or no vaporization or sublimation of nonreacted monomers (col. 3, l. 28-31). Horikoshi seeks to avoid the generation of unpleasant odors during fixing through the use of the polyester disclosed (col. 3, l. 50-56).

Nagase discusses the importance of another component of flash fixing toners when trying to avoid the generation of undesirable odor. Specifically, Nagase discloses a flash fixing toner containing a binder resin, colorant, and charge control agent (Abstract). The reference notes that decomposition products are typically formed during flash fixing because of the high heat involved (col. 2, l. 3-14). A filter is typically used to remove these products from the air around the fixing device. Nagase notes that the charge control agent of the toner has been found to imbue the flash fixing device with undesired decomposition products, such as benzene. In order to remove these undesirable components from the toner the charge control agent undergoes a specific heat temperature under very low atmosphere (col. 4, l. 21-33; col. 5, l. 25-34; Examples).

The background section of the art in the instant specification (pp. 2-3) states that sublimation of the toner binder resin occurs in flash fixing processes and references JP 5-107805, cited with this rejection. The background section also states the filter in high-speed flash fusing printers becomes clogged with sublimate, indicating that it is conventional to collect sublimate in flash fusing devices (p. 3, bottom). The background section also discusses HEPA filters. The Examiner takes Official Notice that HEPA filters are well known air filters.

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the toner of Horikoshi with minimal amounts of low molecular weight components (e.g., oligomers having a molecular weight of less than 1500, unreacted polyester-forming acids, residual benzene from charge control agents) because the art clearly teaches that oligomers and acids from the polyester binder resin give detrimental effects to the toner as well as producing undesirable odor. The same undesirable odor is noted for charge control agent impurities. A review of the art as a whole as well as the admitted disclosure of filters to collect sublimates indicates that low molecular weight components are not desirable in a flash fixing environment. Thus the artisan would seek to minimize the amounts of low molecular weight components in toners. The claim limitations to the specific, minimal amounts of various amounts of low molecular weight components in various ranges is seen as optimization of the result effecting variables recognized in the art. *In re Aller*, 105 USPQ 233, 235.

It would have been obvious to use the toner in Horikoshi's process with the addition of an air filter because both the admitted art, the JP reference and Nagase indicate that air filters are commonly employed in flash fixing processes to remove undesirable byproducts of fixing. The use of the HEPA filter would have been obvious to use as the filter material in order to remove the undesirable material because these filters are by definition high efficiency.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horikoshi *et al.* in US Patent 5,618,648 in view of Nagase *et al.* in US Patent 6,194,115 further in view of JP 5-107805 and the admitted art as applied to claims 9, 13-15, 19, 20, and 21 above, and still further in view of Inaba *et al.* in US Patent 5,741,617.

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Horikoshi, Nagase, the admitted art, and the JP document were described above. These references do not disclose the specific compound given by the formula in dependent claim 16.

Inaba discloses a wax composition containing ester waxes such as Ester Compound No. 4 (col. 8) as a toner additive. This wax falls within the scope of the wax general formula A in column 6. The wax composition aids in fixing and provides good transparency for color images (col. 4, l. 29-41). The wax composition is used in an amount of from 1 to 40 parts by weight, preferably 2 to 30 parts by weight (col. 10, l. 39-55). Example 1 produces a toner having 60 parts by weight of a wax based on 286 total parts of components. This wax has 74 wt. % of the ester wax component.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the exemplified ester wax of Inaba in the invention of Horikoshi because Horikoshi discloses that waxes may be usefully included in the flash fixing toner and Inaba discloses waxes that aid in fixing of toner images.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horikoshi *et al.* in US Patent 5,618,648 in view of Nagase *et al.* in US Patent 6,194,115 further in view of JP 5-107805 and the admitted art as applied to claims 9, 13-15, 19, 20, and 21 above, and still further in view of *Handbook of Imaging Materials* to Diamond, pp. 201-202.

Horikoshi, Nagase, the admitted art, and the JP document were described above. Horikoshi does not disclose the size of the carrier in the developer. Diamond states that the carrier particle is usually 3 to 50 times larger than the toner, which is typically about 12 μm in diameter.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the carrier of Horikoshi with a size of about 36 μm because

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Diamond states that a typical toner size is 12 μm and that carrier sizes can be 3 times that size. Because the value of 12 μm falls within the disclosed range of Horikoshi such a size for the toner would also have been obvious.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.

cdr
July 4, 2003



**CHRISTOPHER RODEE
PRIMARY EXAMINER**